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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/805,755	03/13/2001	Samson X. Huang	10559-361001	2735

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EXAMINER

SHENG, TOM V

ART UNIT	PAPER NUMBER
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2673

DATE MAILED: 08/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/805,755

Applicant(s)

HUANG ET AL.

Examiner

Tom V Sheng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As for claim 1, it is unclear regarding the phrase "the modulated waveform having 2^{N-S} pulses of different pulse widths" as to the scope of the invention. As shown and discussed in the specification (page 3, lines 18-19), the waveform in figure 2 has two different pulse widths. That two pulse widths in combination with 1 spatial bit ($S=1$) and 3 grayscale bits ($N=3$) provide 8 gray levels. There are no 2^{N-S} pulses of different pulse widths but only 2 as discussed (page 6, lines 5-6). However, when one combines the different pulses used in the 8 gray levels, one sees 4 different combined pulse widths in the waveforms. This corresponds to 2^{N-S} . Similarly, from figure 3, one sees $S=1$, $N=4$, with 3 different pulse widths only but 8 different combined pulse widths in the waveforms.

Clarification in the specification and in claim 1 regarding both the pulse widths and the combined pulse widths in the modulated waveform would greatly facilitate the understanding and prosecution of the instant application.

Claims 2-6 are dependent on claim 1.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 7-10 and 12-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Jones et al. (US 6,417,864 B1).

As for claim 7, Jones teaches a system for intensity control of a pixel (using both temporal dither and spatial dither; see fig. 12), comprising:

a first subpixel (pixel part SD1);

a second subpixel (pixel part SD2), the first subpixel and the second subpixel having a light output ratio of **about** 1:1 (ratio between SD1 and SD2 is 1:2); and

a driver (inherent) to apply a pulse-width modulated electrical waveform (frame of subframes TD1, TD4 and TD16) to the first subpixel (SD1) and the second subpixel (SD2), the modulated waveform having a first pulse (one of TD1, TD4, or TD16) and a second pulse (the other one of TD1, TD4 or TD16), the first pulse being applied to the first subpixel and the second pulse being applied to the first subpixel and the second subpixel (for example, when TD1 is combined with SD1 and TD2 is combined with SD1 and SD2 that results in a gray level of 13). See column 10, lines 3 through 27.

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As for claim 8, the first pulse TD1 and second pulse TD2 are **about** equal width.

As for claim 9, the third pulse TD16 is **about** twice the width of the first pulse TD1. Applying TD16 to both SD1 and SD2 would result in a gray value of 48.

As for claim 10, use of amplitude modulation simply produces more gray levels.

As for claim 12, Jones teaches a method of intensity control of a pixel (using both temporal dither and spatial dither; see fig. 12), comprising:

applying a first electrical pulse with a first width to a first subpixel of the pixel to produce a first gray-scale tone (apply subframe with duration TD1 on either pixel part SD1 for gray level 1 or pixel part SD2 for gray level 2); and

applying a second electrical pulse with the first width to the first subpixel and a second subpixel of the pixel to produce a second gray-scale tone (apply subframe with duration TD1 on both pixel part SD1 and SD2 for gray level 3).

See column 10, lines 3 through 27.

The same subframe with duration TD1 reads on both the first electrical pulse and the second electrical pulse with the first width, as claimed.

Claim 13's application of first pulse to first subpixel and second pulse to both first and second subpixels is read by Jones' display of gray level 13 as analyzed in claim 7.

Claim 14 corresponds to claim 9 and is rejected per analysis of claim 9.

Claim 15 corresponds to a gray value of 49.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones as applied to claim 7 above, and further in view of Green (US 5,124,695).

As for claim 11, Jones teaches first and second subpixels of about equal light output ratio but does not teach the first subpixel and the second subpixel being concentric.

Green teaches the areas of subpixels being arranged in a concentric manner, since such subpixels have essentially the same average position and would have no disturbing effect on the eye when viewing a display (figure 1; column 1, lines 24-41).

Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to incorporate concentric subpixel arrangement of Green in Jones' invention, thus further eliminating unwanted positional effect of the subpixels on the eye when viewing a display.

Conclusion

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom V Sheng whose telephone number is (703) 305-6708. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (703) 305-4938. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tom Sheng
August 9, 2004


Amare Mengistu
Primary Examiner